### Public Workshop to Discuss Proposed Amendments to Tables of Maximum Incremental Reactivity Values

April 23, 2003

Research Division Stationary Source Division California Air Resources Board

# Background

- Board approved amendments to the Aerosol Coating Products Regulation on June 22, 2000
  - Also approved new subchapter containing maximum incremental reactivity (MIR) values
- Legally effective on July 18, 2001
- Established reactivity limits for 36 coating categories, based on MIR scale

# Board Resolution and Directive to Executive Officer

- Review MIR values 18 months after effective date of amendments
  - And every 18 months thereafter
  - Make revisions, if necessary
- Directed amendments to update the Tables of MIR Values to be conducted through an Executive Officer Public Hearing

### Current Tables of MIR Values

- Based on the work of Dr. William Carter at UCR
  - Section 94700: MIR values for individual compounds
  - Section 94701: MIR values for hydrocarbon solvents

# Using the MIR Values

- MIR values dated July 18, 2001 used to calculate PWMIR values for aerosol coatings
- MIR values for aerosol coatings unchanged until June 1, 2007
- Only new compounds added to existing Table can be used in aerosol coatings

# Section 94701: MIR Values for Hydrocarbon Solvents

- ARB developed method for assigning MIR values for hydrocarbon solvents
  - Separate table of 24 bins based on Dr. Carter's work at UC Riverside
  - MIR values for bins are based on average boiling range and aromatic content of hydrocarbon solvents
  - Bin MIR values reviewed by Dr. Carter

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## Why Update MIR Values?

- Board resolution requires us to review the list every 18 months.
- Preliminary calculation indicates some of MIR values have changed non-negligibly.
- Over 100 compounds have been added to the SAPRC mechanism.
- Ensure continuous use of "best science" in regulations.
- Staff determined that the update is appropriate.

## Summary of MIR Review

- The MIR values reviewed by Dr. Carter
- No major revisions on the chemical mechanism (SAPRC) and the reactivity calculation scenarios or procedures
- Some corrections or modifications to some mechanisms, emissions assignments, and files and software programs
- · 106 new compounds or mixtures added

### Summary of MIR Review-2

- Among 670 VOC compounds or mixtures, MIR values changed:
  - > 10% for 14 compounds
  - > 5% for 26 compounds
  - > 1% for 305 compounds
  - $\bullet$  < 1% for the remaining compounds
- Continuous use of upper limit estimates recommended
- Only one compound (n-pentadecane) used as surrogate for bin system development

# **Regulatory Development Process** · Public outreach - Public workshop (April 23, 2003) - Reactivity Research Advisory Committee - Other stakeholder meetings • Public comments (May 23, 2003) - Deadline for additional new compounds with associated MIR value • Staff report (July 2003) • Executive Office Public Hearing (Sept. 2003) Staff Report Outline • Proposed amendments to the regulation • Effects of the proposed amendments • Compliance with the proposed amendments - Impacts on existing bin system - Impacts on existing products • Economic impact • Environmental impact **Executive Officer Public Hearing**

- Technical nature of proposed amendments
- Same regulatory process required as for Board hearing
- Executive Officer conducts the hearing

#### **Future Activities**

- Currently surveying various consumer product categories
  - Will evaluate feasibility of reactivity-based regulation for some categories
  - Updated MIR values would be used as basis
- Evaluating feasibility of reactivity-based Suggested Control Measure for architectural coatings

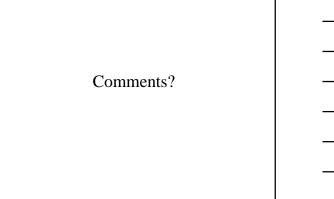
### **Useful Information**

- The EPA's Advanced Notice of Proposed Rulemaking on revised VOC policy
- Other reactivity-based regulations
  - Clean Fuel and Low Emission Vehicle regulations (amended in Nov. 2001)

#### Useful Web Sites

- Reactivity Program http://www.arb.ca.gov/research/reactivity/reactivity.htm
- Consumer Products Program http://www.arb.ca.gov/consprod/consprod.htm
- Low Emission Vehicle Program http://www.arb.ca.gov/regact/levii01/levii01.htm
- Architectural Coatings Program http://www.arb.ca.gov/coatings/arch/arch.htm

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# **Calculating Product-Weighted MIR**



	_Contents_	Weight Fraction	MIR	Weighted Reactivity
1	acetone	0.300	0.43	0.129
ı	toluene	0.150	3.97	0.596
ı	propane	0.200	0.56	0.112
ı	xylene	0.050	7.37	0.369
ı	butane	0.200	1.33	0.266
J	solids	0.100	0	0.000
,	Total	1.000		1.472
	Product M	IIR= 1.47 g (	O <sub>3</sub> /g prod	uct